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## The Learning Potential of Video Sketching

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# The Learning Potential of Video Sketching

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**Abstract:** This paper introduces a *video sketching* technique applied to learning settings and investigates what participants learn from creating and redesigning videos while sketching. This process links various sketching techniques and creative reflection processes to video productions. Traditionally, designers across various disciplines have used sketching as an integrative part of their everyday practice, and sketching has proven to have a multitude of purposes in professional design. The purpose of this paper is to explore what happens when an extra layer of video recording is added during the early sketching phases. Using empirical examples, this paper presents and discusses the video recording of sketching sessions. The empirical data is based on workshop sessions with researchers, students and teachers. Inspired by the work of Olofsson and Sjöln (2007), the sketching sessions were organised into four different phases: investigative, exploratory, explanatory and persuasive. The findings show that adding video to investigative and explorative sketching sessions adds a different time and space dimension, allowing participants to identify and return to crucial moments, such as when one idea spawns a new one or another is rejected. Also, video can make participants very and even too self-aware, though in explanatory and persuasive sessions, this may support participants to use more precise and explicit language. Based on these experiments, four different steps of collaborative video sketching have been identified: shaping, recording, viewing and editing. Combined with the different modes, these steps constitute the basis of our *video sketching framework*. This framework has been used as a tool for redesigning learning activities. It suggests new scenarios to include in future research using the setups presented in the two cases in this paper. Thus, the *video sketching framework* is to be viewed as a dynamic framework that is open for further exploration.

**Keywords:** video sketching, learning, reflection, technologically enhanced learning, creativity

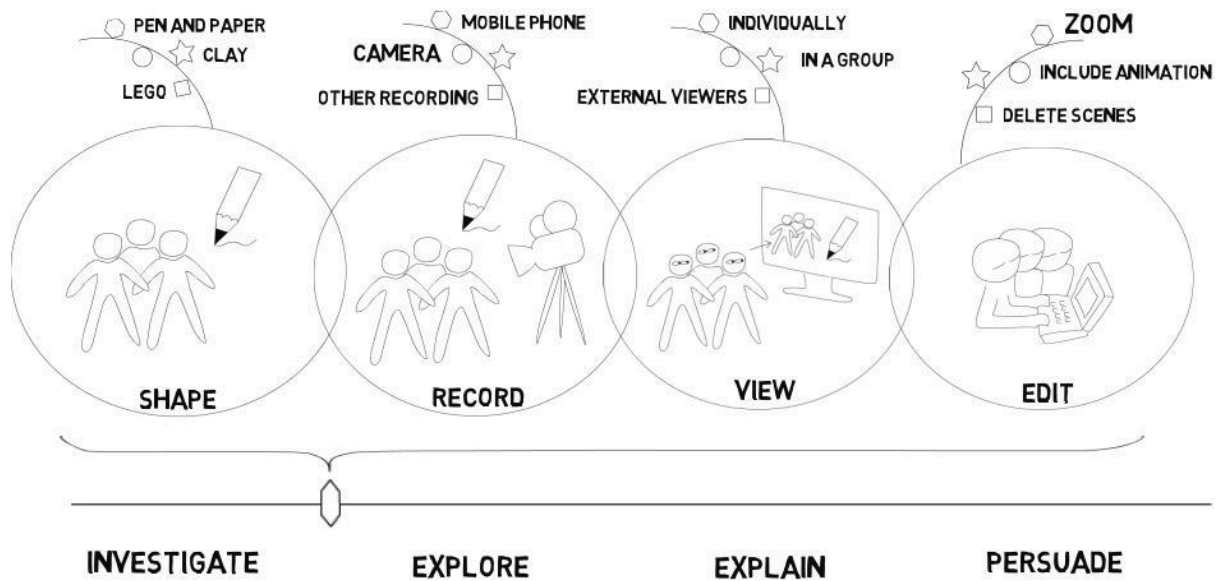
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## 1. Introduction

This paper describes four steps of collaborative video sketching: shaping, recording, viewing and editing; it also discusses different modes and factors of video sketching in order to identify the learning potential of the collaborative video sketching process. This study explores what can be learned from the use of video sketching activities in various learning and knowledge sharing contexts. The research objective is to examine these activities and consider how they can inform research on sketching and the type of learning processes that video sketching supports. This research interest in video sketching as a concept and as an educational tool emerged when a group of colleagues with experience with various forms of sketching and video reflections began to experiment with combinations of these two activities in teaching and research (in design experiments, in organisational change processes and as empirical data-gathering methods). These experiences resulted in conceptualisations and discussions on how to interpret this new form.

The core of this research is summarised in the following suggestion for a video sketching framework (see Figure 1). The frame is a dynamic thinking tool for designing and facilitating learning processes that help learners externalise ideas and reflect on them through dialogues with peers and interactions with the material. This approach involves video recording any type of sketching session, which can take point of departure from many different purposes. The video itself is then viewed and edited. It is often rethought and re-recorded in an iterative manner, which means the video itself constitutes a form of sketch – a video sketch. Thus, this approach enables different reflective practices and conversations among participants through multiple video sketching sessions.

This paper begins by outlining the starting point of this research through a theoretical discussion of the literature on sketching. Sketching can serve four purposes: to investigate, to explore, to explain or to persuade. This section also looks into newer research focusing on video sketching. Next, the process of the current study will be presented. The empirical data and our experiences with video sketching will be introduced, and an outline of the iterative development of the video sketching framework will be provided. Finally, the framework will be put to use by showcasing two different ways of designing and redesigning learning situations.



**Figure 1:** Video sketching framework

## 2. Theoretical framework

This section explains the theoretical basis for our understanding of and way of working with what we label video sketching. The purposes of working with different sketching techniques in professional design are explained, working from traditional drawing to sketching with other materials. Finally, the implementation of video recording sessions in these types of activities is discussed.

Sketching has been used by designers across numerous proficiencies as an integrative part of everyday practice and has a multitude of uses in professional design (Olofsson and Sjöln 2007). Goldschmidt uses the term ‘backtalk of self-generated sketches’ (2003) to describe how a designer creates an opportunity to enter a dialogical space by materialising her thoughts. Either the dialogue can be limited to the designer him or herself and the sketch work, or it can be a means of triggering an idea-generating process in a design group (Goldschmidt, 2003, Buxton 2007). Schön (1992) analysed design processes and found that sketching helps professionals investigate a problem field and discover new ways to set a problem. Schön refers to this as the dialectic of problem setting and problem solving.

However, the purpose of sketching expands beyond problem solving. Olofsson and Sjöln (2007) argue that sketching can serve four different purposes: to investigate, to explore, to explain and to persuade. Investigative sketches work on the level of problem identification. Explorative sketches focus on possible solutions to the identified problems. An explanatory sketch communicates a clear message to people outside the design group; it should communicate in a neutral, straight-forward manner and can be used to get feedback from users, clients and external experts. Lastly, persuasive sketches are designed to ‘sell a proposed design concept to influential stakeholders; according to Olofsson and Sjöln (2007), this is why they are often artistically impressive examples. Consequently, there are big differences between the numerous, rough, pencil-drawn, disposable explorative sketches and the highly detailed, 3D persuasive sketches.

Buxton, on the other hand, defines sketches as thinking drawings generated by designers for designers in the process of ideation. In his vocabulary, explanatory and persuasive sketches are labelled descriptive drawings and presentation drawings (Buxton 2007). According to Buxton, sketching is a specific mindset rather than a particular technique. In sketching, the focus is on pruning and experimenting, on what might be and not what already is.

To further understand the reflective processes that occur when working with video sketching, we draw on the work of Donald Schön (1992). Schön focuses on reflective practices among practitioners and notes that it is vital to be able to operate in uncertain, unique contexts in the field of design. According to Schön, a design situation is unique because there is not only one way to solve the problems that may occur. This places a demand on the designer to reflect in terms of *reflection-in-action* and *reflection over action* (Schön 1992). Schön further points

out that, through the designer's conscious use of reflection during the sketching process, the designer engages in a reflective conversation with the situation: 'Reflective conversation with the situation may occur in the mode of discovery, or in the mode of design, or in the hybrid forms that combine the two' (Schön, 1992, p 126). These categories of purpose resonate well with our intention to create a framework that 'forces' participants in learning and knowledge creation/sharing situations to stop and reflect on what they are working with and which roads from problem to solution they are choosing and why. This framework focuses in particular on the internal processes of figuring out what issue is at stake (the *mode of discovery* in Schön's terminology) and how can it be solved (Schön's *mode of design*).

Sketching can be categorised in numerous other ways besides the purpose of the sketch, such as medium or subject. Traditional media include pencils, markers, pastels, airbrush etc., but new studies have suggested expanding this category to include temporal media, such as Vistisen's (2016) approach to sketching using animation. Drawing on McLaren (Sifianos 1995), Vistisen defines animation as 'the process of deciding and manipulating the differences between a set of graphical positions, with enough difference to produce a sequential illusion of apparent motion or change' (Vistisen 2016, p 54). The pacing, rhythm and audience anticipation add something to an animation, which is more than the sum of the individual frames. Further, animated sketching excels at providing novices a way to mentally simulate the future (Vistisen 2016) and can thus function as a powerful tool for communicating proposed concepts, similar to explanatory sketches as explained above.

Many projects in educational and organisational learning contexts primarily build on the initial assumptions and ideas of the project participants. Few projects, however, build on an exploration of the many possible ways a project can go; that is, few projects work with alternative design (Ørngreen 2015). Similarly, when working on refining chosen solutions, it can be difficult for participants to clearly understand and disseminate what factors are at play, what other elements influence them and what is important in a learning design. Ryberg et al. argues that there is a general agreement in the literature about that a learning design consist of multiple learning activities, have certain learning objectives, a sequential structure or flow, and a number of resources needed to fulfil the designed activities (Ryberg et al. 2015, p 76). Collaborative video sketching involves working with a form of temporal sketching. It incorporates a deliberate, purposeful focus on steps that, we would argue, encourages and even forces rapid iterations of a learning design or a research finding related to learning designs. Through the recording, reviewing and editing processes, the participants reflect and become aware of their own assumptions and prioritisation about the elements that the learning design consist of.

### 3. Methodology

Studies documenting how sketching activities contribute to research remain scarce (Wyche and Grinter 2012). Therefore, this section describes this study's collection and analysis of empirical data (through workshops, lectures, etc. using video sketching) and unfolds the iterative development of the video sketching framework.

The empirical research in this study consisted of establishing a theoretical frame for sketching through reading the literature (inspired by backward snowballing, Jalal and Wohlin 2012) and of small action research experiments from our own teaching and research (Greenwood and Levin 2007). Both of these types of research strengthened the methodological development of the video sketching technique. This research approach (using our own teaching and research) was chosen explicitly because it allowed us to iterate and modify the design of the video sketching approach over time and in different contexts and to investigate the problem field and possibilities of video sketching.

In order to explain the process of collaborative video sketching in detail, this paper focuses primarily on material and experiences from just two cases. The first case was a four-hour workshop with approximately 75 students enrolled in a master's studies programme. In the workshop, the students used video sketching in their problem-based learning (PBL) projects. Two of the authors were the teachers and facilitators for the workshop. The other case involves researchers using video sketching to examine a research theme they had been working on for a number of years. One of the authors participated in this project; another acted as the media expert and recorded and edited the sketching session. Therefore, the authors participated in the research process in various roles and have experienced video sketching from various perspectives as well as analysing the material (there were also a number of cases that are not described explicitly here). Furthermore, the video sketching process has



often been documented through photos and the videos produced during the process, in addition to the notes and dialogues created during the process and immediately after it.

In general, mutual dialogues have been prioritised throughout this study, and our understanding and conceptualisation of video sketching have been developed through collaborative sketching processes. To qualify the analysis of the activities and our collective understanding of video sketching, reflexive dialogue has been a priority throughout the project. For example, Stige, Malterud and Midtgarden (2009) suggest that qualitative research be evaluated through reflexive dialogue. They describe reflexive dialogue using the acronym EPICURE, for engagement, processing, interpretation, (self- and social) critique, usefulness, relevance and ethics. In this project, the discussions entailed a number of iterations addressing the big picture, which included understanding video sketching and determining which factors are at play when applying video sketching in learning situations. Discussions also addressed details by investigating the empirical data from our case studies. Figure 2 below shows our sketching approach as a collage in time and in decision space – moving between discussions on the analysis of which factors are at play and how to represent them. Several factors may be noticed in our process (and in Figure 2): 1. We used different materials (paper, blackboard, computer) to sketch on, and we used different representation forms (graph, table, narrative drawing, etc.). This helped us identify and verbalise the factors at play. 2. Layers of sketches (on paper and on the blackboard) signified different pathways and interpretations between members of the group or over time; time is illustrated from left to right in Figure 2. Elements of the four purposes of sketching (identified above) are easily traced as the sketches progress from rough and meaningful only to the participants in the design group in the upper left corner to the more straightforward appearance of the sketches in the lower left corner once the problem and solution space had been explored and settled.



**Figure 2:** Collage of our sketches made during the critical reflexive dialogue

In his participatory pattern design methodology, Mor (2013) put forward a number of categories into which already performed or tested designs as well as hypothetical design solutions can be sorted. This paper focuses mainly on design narratives and design scenarios. Design narratives are recorded instances of attempts to solve a similar recurring problem. Design scenarios, on the other hand, are hypothetical, testable proposed design solutions. Through the two cases described in this paper, we will show the potential of the video sketching framework by describing them as design narratives. After this, we will put the model to use in redesigning the learning situations into design scenarios.

## 4. Using the video sketching framework as a design narrative

### 4.1 Reflective video sketching in PBL and knowledge sharing settings

In October 2016, approximately 75 students in their first semester in a Master of Arts (MA) in Learning and Innovative Change participated in a four-hour reflective video sketching workshop. According to the teaching

plan, the formal objective of the workshop was to use ICT as a medium for documenting and disseminating students' knowledge and what they had learned about learning and change processes through their problem-based learning (PBL) projects. As lecturers, we also saw the potential to let the students experience how they could learn from and reflect on their work process as it unfolded in order to illustrate that the process is just as important as the end product.

The workshop was scheduled as a process. The students worked in their PBL groups through four phases. The phases were inspired on one side by the four types described by Olofsson and Sjöln (2007), and on the other by iterations of sketching, recording the sketching, and editing the recordings (see Table 1). As teachers, we acted as facilitators during the four hours. This involved ensuring that the sketching and video recordings ran smoothly in the groups and also explaining the method of using sketching to encourage a dialogue on the issue at hand. The students recorded using mobile phones, tablets or computer webcams. We did not ask them to use specific editing software, but we did provide some links to freeware in case they did not have any software.

**Table 1:** A brief outline of the 'frame' given to the PBL students

1 – INVESTIGATE	2 – EXPLORE	3 – EXPLAIN	4 – PERSUADE
In groups, choose a problem/opportunity from your PBL.	Sketch and record a common idea about the theme.	View and edit the recording, and if needed sketch and record again.	Choose elements for your sketch – edit, re-record, and produce.

The students discussed and sketched out central points in collaboration, and they recorded this process. This meant that the dialogues and the temporal aspects of the sketches were documented. When the students viewed the recorded videos, we noticed that this triggered discussions on not only the content of the sketches and the topics of the discussions; the recording gave the participants insights into why certain directions were chosen. For example, one utterance from participant A led to another reflection from participant B, and as a result the sketch and dialogue evolved as it did. A few groups had time to explore several pathways, though this is something that could be explored in future studies. Another and more predominant aspect was that the participants realised that, during the dialogues, they mentioned issues that were important for them and for the group, but that they were not explicitly conscious of before reviewing the recording. As facilitators, between phases 3 and 4, we sought to highlight ways of getting to the core of the issues. We also tried to reflect the students' ideas by introducing steps and questions like, 'What would happen if, in the next round of recording and sketching, you enlarged one area, omitted another, or introduced this concept in different ways?' or 'How can you represent what you are talking about visually?' etc. Thus, the video sketching process introduced by-purpose-obstacles or obstructions, thereby forcing to decisions and later reflection on these decisions.

The phases described above was also applied in smaller settings with teachers, administrators and pedagogical consultants/practitioners, particularly participants from vocational training and university colleges. In these sessions, the participants were asked to work in ad-hoc groups (generated for the occasion). Each group selected an area to explore in a reflective video sketch, and then they explored their topic collaboratively – providing each other with feedback. The videos were the very first versions of ideas they could continue working with in their own home institutions or classrooms, so the videos themselves were not shared. Nevertheless, during the breaks and after the sessions, the participants said that they found that video recording the sketching process gave them another dimension of backtalk. It seems that this process supports a meta-level of communication: one is confronted with one's own meaning through the recording, helping one be clearer or more explicit about (for example) the priorities of the job or task at hand.

## 4.2 A video sketching dialogue

Another set of video data was developed through a video sketching session that explained research findings. The purpose of this session was to prepare a video on a specific research topic based on the work of two researchers (A and B). It was to be published on the internet for a broader audience. A third researcher (C) was present; C has a media background and was to record and edit the short movie. Before recording, A and B talked for ten minutes, sketching out the area they wanted to discuss. During this process, it became clear that the sketches helped the researchers address the topic and share a common dialogue around the topic. Neither of them prepared any sketches beforehand. The third person (C) used two cameras on camera stands. All three briefly discussed the setup: how much of the table was visible, was the angle appropriate, etc. After the sketching



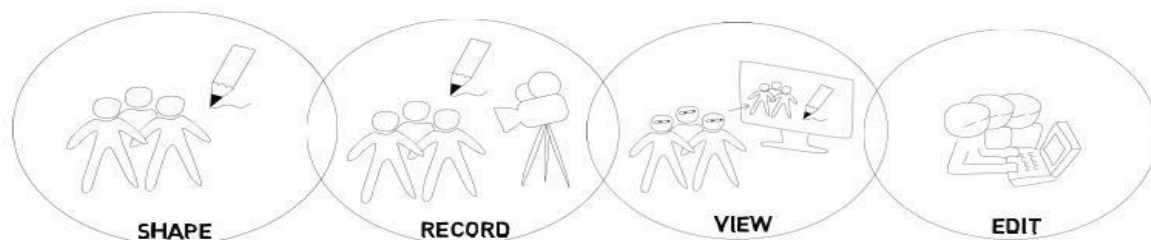
process was recorded on two cameras, the recordings were edited and combined into one video. The third researcher (C) made all the editing choices.

At the beginning of this project, one of the researchers (A) expressed discomfort with the idea of being filmed while discussing the research topic. After the session, she said that sketching helped her maintain a focal point and reduced her uneasiness with being filmed. Sketching helped her focus on the research topic and on communicating about it. A and B had been colleagues for a number of years and had several years of research experience in this specific topic. This seemed to give the researchers some freedom to reflect on the topic without prior preparation. The recording took place in an informal room with a cosy atmosphere. At the end of the session, both researchers (A and B) were intrigued by the speed at which they had discussed their common knowledge using sketches and were pleased with the overview generated in the session. They also said sketching helped them gain clarity on what was important and what was not.

A retrospective analysis showed that the sketching activities performed before the video recording began would be categorised primarily as exploratory sketches. The researchers (A and B) explored how to communicate the chosen topic in a (for them) unusual setting while sketching. The sketching done during video recording (while A and B sketched a visualisation of the topic while discussing it – knowing they were being video recorded) could be categorised as explanatory sketching. However, it could also be argued that the activity involved a combination of explanatory and persuasive sketching. The researchers (A and B) focused primarily on explaining and communicating during the recording session. However, later analysis of the video and discussions with the two participants revealed that, since they knew the recorded video would be edited into a publicly available video, the dynamic was not only explanatory; a performative layer was introduced. This performative layer became even more important during the post-editing process, when the third person (C) edited the recording to create a video sketch for public consumption. In some ways, the performative layer, as a third eye, played a role in the making, in-situ; the researchers found that they were more self-conscious – but, therefore, also more explicit about their research findings. This led to new insights for all three participating researchers.

## 5. Collaborative video sketching – a visual overview

In our empirical material, we see that the process of video sketching typically consists of the phases or steps shown below, but without clear starting or ending points for the phases (Figure 3).



**Figure 3:** Phases

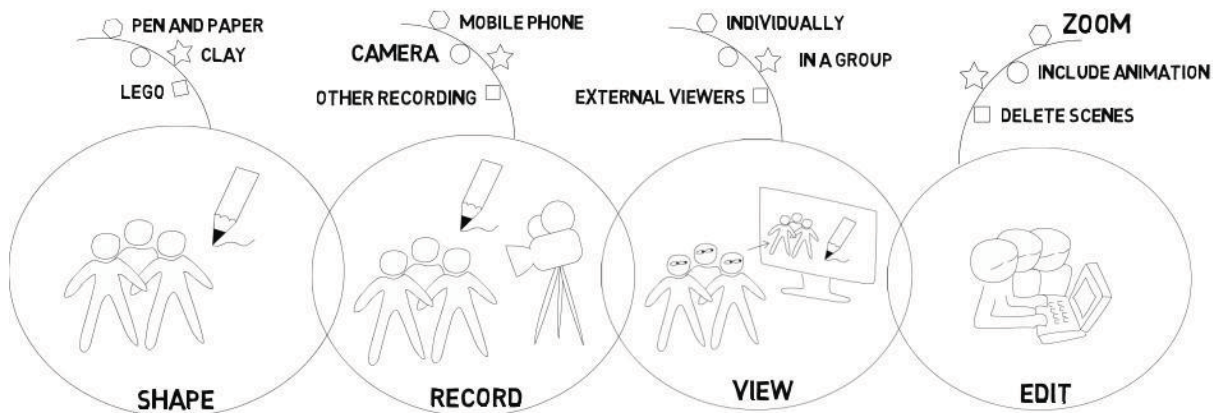
**Shape:** In this step, sketching (as traditionally understood) is done; the sketcher enters into a conversation with the material (typically pen and paper, but it could also be clay, Lego bricks etc.). The sketching activities can be individual or collaborative.

**Record:** In this phase, the traditional sketching activities are video recorded. These recordings can be recorded from different angles – it may focus on the sketcher (an individual) or on the verbal dialogue between the sketchers (collaborative), or it may focus on the material. The recordings can be done using camera stands, or the participants can use mobile devices to record themselves.

**View:** In this phase, the recorded sketching activities are viewed. The recordings can be viewed by the sketchers participating in the video or by external participants. This phase can initiate reflection on different levels, as outlined briefly in the cases above.

**Edit:** In this phase, the video is used as a sketching tool. By using different framings, such as zooming, panning, jumping and layering, the participant enters into a conversation with the material by reframing and remixing the recordings in order to explore new possibilities. The edited recordings are video sketches that can re-enter the other phases or be viewed by people other than the participants (external participants).

Each step evolves a number of decisions and choices, which the facilitators and participants in video sketching processes for learning and knowledge sharing can experiment with. These choices are not scales or mutually exclusive; they are factors that one can be aware of, such as the choice of shaping medium, recording medium etc. (Figure 4).



**Figure 4:** The choice of shaping medium, recording medium etc

As discussed in the theoretical section, there is a reflexive element when a person sketches: the sketcher engages in reflective conversations with the situation. Our data suggests that there is yet another layer of dialogue introduced with video sketching, expanding on the back-talk characteristics of traditional sketching (Goldschmidt 2003, Schön 1992). This layer relates to the collaborative dialogue in retrospective viewing. According to Schön's interpretation, there is a reflective element while the sketch is being created, as well as in the (re-)viewing and (re-)design of the video sketch. What we point to is that these reflections can take place with peers, and that the nature of the reflective dialogue varied, depending on if the intention was to result in a video sketch for internal or external use.

We see that the different purposes of sketches can be used explicitly by video sketch facilitators and participants; the video sketching process can move around in these modes and can maintain a more investigative or more persuasive approach, depending on the objectives (Figure 3). This results in an overall suggestion for a video sketching framework, as presented in the beginning of this paper (Figure 1). The following section will outline suggestions for the redesign of the learning design of the two cases described in this paper – a design scenario perspective (Figure 5).

## 6. Using the video sketching framework as a design scenario

We have applied the video sketching model to redesign the two learning activities described in this paper in order to consider future design scenarios (Mor 2013). From a methodological perspective, it is interesting that these findings became clear to us after making a collaborative video sketch, which was intended to help explain our method to an external audience. When reviewing the recording of our panel-like discussion, the following three design scenarios became clearer and more explicit; these new designs may be explored the next time we facilitate the activities.

*Using external viewers in the explanatory/persuasive modes:* When collaborative video sketching is used with primarily a persuasive/explanatory intent, such as when researchers or students use collaborative video sketching to find, explain and pitch their project findings, a more explicit use of external viewers may be useful (represented in blue in Figure 5). To use video sketching for the dissemination of research findings, we will add an iteration that involves inviting the target group into the process. This will allow us to obtain the opinions of external viewers immediately and also to get the external viewers involved in reflecting on the subject at hand. That will help demonstrate whether the intended explanation/persuasion works, and we will be able to get ideas for how it could be improved. This may involve returning to the shape and record phases, with and without the external viewers.

*Identify shape and shape while recording relations:* Some people who find the idea of having to either sketch or be recorded is difficult. For these participants, the video sketching process involves a steep learning curve, and it may be unnecessarily over-frustrating or make the participants uncomfortable. In future setups and

facilitations, we could consciously work to identify these participants and help them feel more at ease with the situation. A challenge for novice designers is often a lack of skill in drawing or modelling. The primary aim of sketching, however, is to externalise thoughts and shape them into figures that others can understand. Recording sketching sessions helps diminish the focus on the sketch itself by providing an extra layer of recorded dialogue. This makes the shaping both visual and verbal, and stating this explicitly at the beginning could make some researchers or students more at ease, if, for example, they are uncertain of their own visual shaping capabilities. Others are more reluctant to participate in the actual recording, of themselves or their speech. For them, knowing that they can sketch out ideas, keeping their eyes on the paper/blackboard and not on the camera, and that they can do this collaboratively, may be a way forward.

*Explicitly work on alternative designs through iterations of record, view and record:* Recording and reviewing sketching sessions shows a great deal of promise for maximising the ability to explore as many design solutions as possible. This design scenario explicitly addresses a common problem of students and untrained designers: that of limiting their designs to only a few ideas too early in the process. Adding an extra step in early sketching phases by letting designers review their sketching sessions makes it possible to identify crucial moments when one idea spawns a new one or another is abandoned. This added step further benefits from having the designers work in groups; the recorded dialogue can generate new conversations among the members as they review, stop and analyse the video material. In future designs scenarios, we will implement this step much more explicitly, though we are also aware that this may require more than a four-hour workshop to explore; in the case of the master's programme students, perhaps twice as much time would be needed for such a workshop.

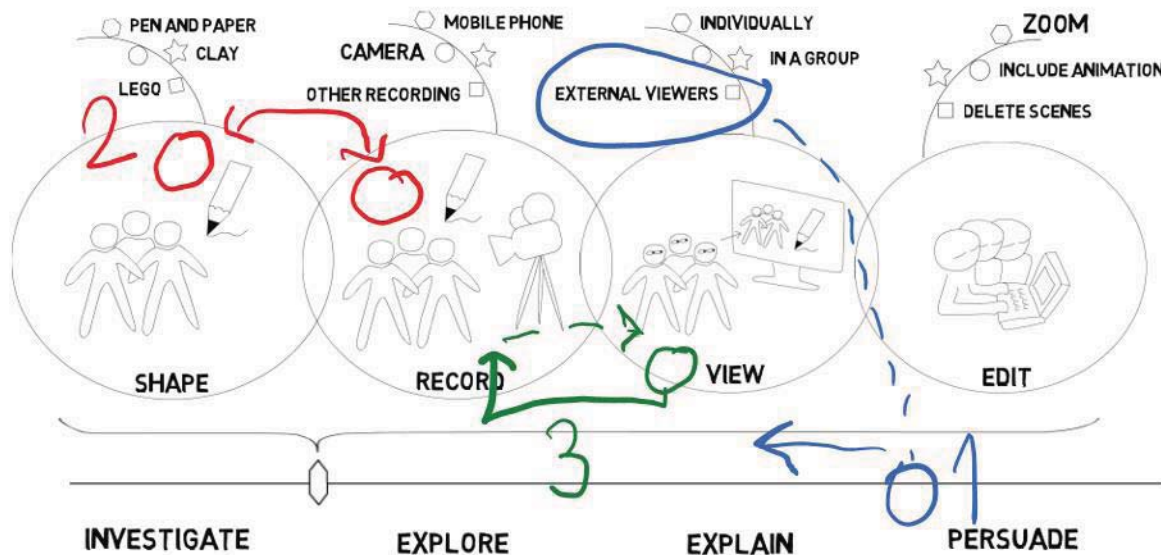


Figure 5: Design scenarios – three scenarios that we will include in future learning designs

## 7. Conclusion

We argue that collaborative video sketching, with its various steps, adds value to the reflective design process in learning situations. This paper presents our framework for collaborative video sketching and the process that we went through to formulate the framework. An analysis of collaborative video sketching processes shows that they can facilitate a thought process that helps participants externalise their ideas and reflect on them through dialogues with peers and interaction with the material. We then used the framework as a tool for redesigning the examples described in this paper, pointing out new scenarios to include in future uses of the framework in similar situations. When working with video sketching, there is not only one way, but multiple ways to facilitate the process; thus, the collaborative video sketching framework should not be seen as a definite identification of relevant factors. Instead, we hope the frame will inspire future uses, including factors or dimensions that are not specifically mentioned here – and we would be happy to learn how the framework has been incorporated into other situations, especially educational contexts.

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